ABSTRACT

A weldable workpiece prepared by depositing on a surface of the workpiece, an absorber dye possessing strong absorption and a high extinction coefficient. The dye is deposited at a uniform density and thereby has the capacity to convert inbound radiant energy over about 0.1 J per square millimeter into thermal energy via vibronic relaxation and exothermic decomposition. In optical applications, the workpiece forms welds of high photopic and optical transmission. A method for preprocessing the workpiece describes steps for selecting polymers, dyes and vehicles.